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ORIGINAL: ENGLISH

FIFTH UNITED NATIONS REGIONAL
CARTOGRAPHIC CONFERENCE FOR
THE AMERICAS
New York, 11-15 January 1993
Agenda item 9

ADOPTION OF THE REPORT OF THE CONFERENCE

Draft report

Chapter I

ORGANIZATION OF THE CONFERENCE

A. Terms of reference

1. The Fifth United Nations Regional Cartographic Conference for the Americas, convened in accordance with Economic and Social Council decision 1989/116 of 22 May 1989, was held at United Nations Headquarters from 11 to 15 January 1993.

B. Opening of the Conference

2. On behalf of the Under-Secretary-General for Economic and Social Development, Mr. William Seltzer, Director of the Statistical Division, welcomed the participants and noted the support of so many Governments, not only from the region but also from other parts of the world. After reviewing the activities of the Department since the Fourth Conference, he stated that the Conference was taking place in a rapidly evolving international context in which global partnership had succeeded the cold war era.

3. He noted that a new integrated approach was emerging in the consideration of developmental, social and environmental issues. Such issues as population growth, poverty alleviation, employment and human resources development, and national capacity-building should now be addressed in a comprehensive and cohesive manner.

4. The Executive Secretary of the Conference, Mr. Ousmane Gueye, thanked the Under-Secretary-General for his opening address and added his welcome.

C. Attendance

5. The Conference was attended by 100 representatives or observers from 35 countries, 3 specialized agencies and 7 intergovernmental and international scientific organizations. The list of participants appears as annex I to the present report.

D. Agenda

6. The Conference adopted its agenda as contained in document E/CONF.86/1. The agenda as adopted appears as annex II to the present report.

E. Adoption of the rules of procedure

7. At its 1st plenary meeting, the Conference adopted its rules of procedure as contained in document E/CONF.86/2. The rules of procedure as adopted appear as annex III to the present report.

F. Election of officers

8. The Conference elected the following officers:

President: Myriam Ardila (Colombia)

First Vice-President: Gaspar Reza Maqueo (Mexico)

Second Vice-President: Carol Beaver (United States of America)

Rapporteur: Kim Lochhead (Canada)

G. Organization of work

9. The Conference adopted the organization of work as proposed by the Secretariat.

H. Credentials of representatives to the Conference

10. The Credentials Committee, composed of the President, the two Vice-Presidents and the Rapporteur, with the Executive Secretary ex officio, reported that the credentials of all representatives had been found to be in order.

I. Establishment of technical committees

11. The Conference established three technical committees, for which the following officers were elected:

Committee I: Cartographic data acquisition
(Agenda items 5 (b), (c), (d), (e) and (g))

Chairman: Francis Charles (Trinidad and Tobago)

Rapporteur: Ricardo Montaner (Chile)

Committee II: Cartographic data manipulation
(Agenda items 5 (j), (k) and (l))

Chairman: D. R. F. Taylor (International Cartographic Association)

Rapporteur: Denis Genest (Canada)

Committee III: Cartographic data storage and presentation
(Agenda items 5 (a), (f), (h), (i) and (m))

Chairman: Rene Gonzalez (Guatemala)

Rapporteur: Susana Arciniegas (Ecuador)

The Conference decided not to nominate Vice-Chairmen for technical committees.

Chapter II

SUMMARY OF PROCEEDINGS OF THE PLENARY MEETINGS

Agenda items 1-4

12. The Conference considered in plenary meeting agenda items 1 to 4, 6, 7 and 8.

Country reports

13. Under agenda item 4, 11 documents were presented on country reports (E/CONF.86/WP.1, WP.20, WP.21, WP.24, WP.28, WP.29, WP.30, WP.31, WP.32, WP.33 and WP.36).

14. The representative of Brunei Darussalam presented his country's report (E/CONF.86/WP.1). Activities reported related to map production, map production on request, town and village tourist maps, geodetic surveys, digital mapping, national house numbering project and LIS/GIS developments. On a question from Mexico regarding the status of the conversion of conventional maps to digital form, the representative of Brunei Darussalam stated that this work might be contracted for a completion date of 1996.

15. The United States of America presented its national report (E/CONF.86/WP.20). Since the Fourth United Nations Regional Cartographic Conference for the Americas, United States cartographic activities included further advances in computer technology application to mapping, remote sensing, geographic information systems and inertial and satellite positioning systems.

16. The report described activities in the following eight subject areas: Geodesy, Image mapping, Topographic mapping, Hydrography and oceanography, Aeronautical charting, Geographic names, Digital cartography and Global change.

17. The report also gave a detailed description of the activities of the following agencies which produced various maps: the United States Geological Survey, the United States Department of the Interior, the United States National Ocean Service of the National Oceanic and Atmospheric Administration and the Defense Mapping Agency of the Department of Defense.

18. The representative of Spain presented his country's report entitled "Informe general" (E/CONF.86/WP.21). Areas discussed include: geodetic activities, topographic mapping, national GIS development, digital terrain models and national Spanish atlas. Spain has emphasized public and private sectors cooperation in surveying and mapping projects. On a question asked by Mexico regarding user interest in digital data, the representative of Spain indicated that there was already an evident interest from users and that it was expected that this demand would grow.

19. The representative of Germany presented his country's report (E/CONF.86/WP.28). The report concentrated on re-establishing the geodetic reference system in the eastern region of the reunified Germany, as well as the development of cadastral system for that region, which was under way. Gravity surveys would also be carried out. He emphasized the need for a unified reference system for all these cartographic activities. International projects in various South American countries and Antarctica were mentioned.

20. The sixth paper submitted under agenda 4 was the report on Oman (E/CONF.86/WP.29). The country's National Survey Authority was founded in 1985 to improve geodetic and topographical survey data, provide contractual and quality control between mapping contractors and ministries, act as custodian for all maps and geographical data, and operate all security aspects of mapping and aerial photography within the Sultanate.

21. Following the recent publication by the National Survey Authority of a four-sheet map of Greater Muscat - the capital, the Authority now intended to produce high-quality mapping of other urban areas using its own resources. For the past several years, all mapping had been produced in both hard copy and digital format.

22. Activities had also commenced recently on the development of a national geographic information system. A pilot scheme was currently under way to test data conversion and further refine and develop a full geographic information system specification at appropriate scales.

23. Argentina presented a paper (E/CONF.86/WP.30) entitled "Introducción al informe nacional presentado por el servicio de hydrografia naval". The Government was currently mapping the country's coastline, as well as that of Antarctica. The goal was to obtain greater knowledge about the sea and its subsoil, and to provide the navy and shipping interests with more information about the coastline. The Navy Hydrographical Service was engaged in updating symbols and place names.

24. The Military Geographical Institute drew up maps for the overall Republic of Argentina, surrounding islands, and Antarctica. Those maps were developed on scales of 1:50,000, and 1:250,000. Studies were also under way on the environmental impacts on Antarctica. The Institute planned to cover Argentina's portion of the Antarctica with a satellite observation network.

25. The representative of China introduced his country's report (E/CONF.86/WP.31) entitled "Development of surveying and mapping in the People's Republic of China", which had been prepared by the National Bureau of Surveying and Mapping and which dealt with the development of surveying and mapping in China between 1989 and 1992.

26. Since the Fourth Regional Cartographic Conference for the Americas, there had been great progress in China in the areas of surveying and mapping. Priority had been placed on the completion of a 1:10,000-scale topographic mapping and on mapping for land resources investigation. Among the important surveying and mapping projects completed were the national second-order levelling network, the national first-order gravity network and the 1:1,000,000-scale national topographic information system.

27. The representative of the United Kingdom of Great Britain and Northern Ireland introduced his country's report on cartographic activities of the United Kingdom in the region of the Americas (E/CONF.86/WP.32). The report contained an account of the contributions that had been made by government agencies of the United Kingdom since the Fourth Conference to the surveying, mapping and charting of the countries and seas of the Americas. According to the report, the main contributions to cartographic activities in the Americas had been made by such agencies as OS International (the Overseas Surveys Directorate had been renamed OS International in April 1991) and the Defence Ministry's Military Survey and Hydrographic Office.

28. OS International had undertaken mapping and surveying projects in 13 countries in the region often as part of the United Kingdom's aid programme. The Military Survey's activities had been concentrated on its North American training areas and Belize. The Hydrographic Office had continued its work of updating the Admiralty Charts in those parts of the region for which it was responsible, and the Royal Navy had completed a number of surveys in the Caribbean and West Indies.

29. Topographic surveying and mapping projects had been undertaken in collaboration with local survey departments in the following countries of the region: Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica,

Falkland Islands (Malvinas), Grenada, Guyana, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines.

30. The report of Panama, "Informe tecnico de las actividad cartograficas en Panama" (E/CONF.86/WP.33), was presented by the country's representative, who said that in the past four years activities in cartography had developed notably in Panama, resulting in increases in map production and the introduction of new technologies. The trend was towards developing a geographic information system that would not abandon traditional techniques.

31. For one year, Panama had used global positioning systems for its cartography. Topographic maps at a scale of 1:50,000 had been developed using "spot images". LANDSAT images were being employed in surveys to cover marsh and forest areas.

32. The fourth consecutive edition of the national atlas of Panama was about to be produced. Panama was developing a national digitally based cartographic database for research and planning for various projects.

33. In the area of hydrography, a new survey was planned which would employ the GPS Pathfinder system. Panama had hosted the nineteenth Central American Cartographic Week, which brought together Central American institutes to present and compare their programmes.

34. The country report of Romania entitled "Overview and future trends in cartography in Romania" (E/CONF.86/WP.36) was presented by the country's representative who gave a brief history of cartography in Romania. Activities such as astronomy, triangulation, levelling and satellite geodesy were discussed in the report. Topographic mapping activities, photogrammetry and remote sensing were also discussed. A trends and needs section of the report outlined various technologies (e.g. GIS, computer hardware/software, GPS) being considered or developed for use in Romania. The "reference" section of the report documented papers published by Romania in recent years.

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CHAPTER III

WORK OF COMMITTEE I: REVIEW OF THE LATEST TECHNOLOGY IN CARTOGRAPHIC DATA ACQUISITION, MANIPULATION, STORAGE AND PRESENTATION, WITH SPECIAL EMPHASIS ON POTENTIAL APPLICATION IN DEVELOPING COUNTRIES

1. Committee I considered the following topics: Conventional and satellite geodesy, including Global Positioning Systems (agenda item 5 (b)), Remote sensing for cartography (item 5 (c)); Hydrographic surveying and nautical charting (item 5 (e)); and Cadastral surveying and mapping (item 5 (g)). The Committee reviewed 10 papers dealing with these topics. _____ draft resolutions were submitted to the Conference and subsequently adopted by the Conference as resolutions ____, ____, ____ and ____ (for the text of the resolutions, see chap. ___ below).

A. Conventional and satellite geodesy

2. The United States of America submitted a paper entitled "Marine applications of the Global Positioning System" (E/CONF.86/WP.11). The paper described the various possible applications of the NAVSTAR Global Positioning Systems (GPS), with special emphasis on marine navigation, mapping and charting, geodetic and geophysical applications. The paper also included 12 tables with current applications of GPS.

3. The United Nations Secretariat presented a paper entitled "La télédétection aux fins de la cartographie, topographique et thématique" (E/CONF.86/BP.3). The presentation was an overview of the basic concepts of geographic information, digital images and spatial applications. The particular problems of resolution and location, according to the type and nature of various objects analysed were also addressed, making it clear that currently no civil satellite fully satisfied the specifications for classic maps. Therefore, the emphasis should be placed on special applications such as thematic cartography.

4. Ecuador presented a paper entitled "G.P.S. en el Ecuador" (E/CONF.86/WP.18), describing in detail the establishment of the national geodetic control network based on GPS. Special problems deriving from the topography of Ecuador that affected the performance of GPS were also addressed. The work started in 1991 and it is being performed by the Instituto Geográfico Militar of Ecuador.

5. Canada submitted a paper entitled "From National to Global: the Changing Focus of the Geodetic Survey of Canada" (E/CONF.86/WP.19), describing the current activities of the Geodetic Survey Division of Canada, and the products and services offered to domestic and foreign clients. It emphasized that special mention should be made of the definition and readjustment of survey control networks referenced to the North American Datum 1983 (NAD'83).

6. Germany presented a paper entitled "EUREF - A Modern Geodetic Approach to Establish an All-European Reference System" (E/CONF.86/WP.26), giving a detailed description of the necessity for a new European Terrestrial Reference System capable of satisfying the demanding needs of geodesy and digital cartography. Earlier solutions and WGS-84 were also reviewed, together with a description of the densification campaign devised to establish EUREF-stations, which were to number approximately 300 and be located up to a maximum of 500 km apart from each other, and which would need about 92 GPS observation sites. The EUREF design will provide several transformation parameters, including WGS-84.

7. The United States of America submitted a paper entitled "The North American Vegetation Index Map Using Advanced Very High Resolution Radiometer Data Sets" (E/CONF.86/WP.5), describing the methodology used to prepare a vegetation map of North America using satellite data. This type of cartographic map had proven useful in controlling insect damage to agriculture, monitoring fire danger conditions in forest and grassland and in forecasting potential impacts of climate change. The paper also discussed the need for application in developing countries.

8. Canada presented a paper entitled "Canada's Tropical Forestry Initiative in Latin America - An Airborne Synthetic Aperture Radar (SAR) Program" (E/CONF.86/WP.13), outlining the aims and objectives of the Tropical Forestry Initiative research programme in Brazil, Costa Rica and Venezuela and highlighting the preliminary results of some of the data, their interpretation and comparison with ground verification information. C-Band airborne radar

was used mainly to test SAR airborne data capability to differentiate between different types of tropical vegetation classes through visual analysis and digital image processing, but also to determine reservoir land-water boundaries under forested areas, and to evaluate the capability of SAR data in different configurations to discriminate between different rock types and geological structures.

9. Canada presented a paper entitled "Cartographic applications of remote sensing for the Americas at the Canada Centre for Remote Sensing" (E/CONF.86/WP.23), describing the many projects being managed at the Centre, several of them in cooperative work with other American countries. Projects highlighted were the Topographic Mapping in Costa Rica from SAR Data using Digital Video Plotter to extract planimetric and altimetric features from stereo SAR data, the RESORS (servicio del Sistema de Recuperación en Linea y Descripción de Productos), which is a bibliographic database devoted to remote sensor data, and the Cartography and Remote Sensing Orbital Systems, which use Multispectral Scanners to scan the ground in linear strips across the orbital path, independent of solar illumination and clouds.

10. The United States of America submitted a paper entitled "The Coast and Geodetic Surveys' nautical chart rescheming plan" (E/CONF.86/WP.8), describing the necessity to standardize the scales of charts in accordance with international specifications, to standardize chart paper sizes, using A0 or derived sizes, and to standardize chart projections, seeking goals such as reducing the number of total charts managed by the survey. It also discussed the incorporation of requests for changes to the nautical charts by mariners in the private and government sectors, and the international standardization and cartographic simplification proposed by the International Hydrographic Organization.

11. The International Federation of Surveyors presented a paper entitled "Cadastral reform: building the infrastructure for sustainable development" (E/CONF.86/WP.34), highlighting the broad role that the cadastre plays in land management and the need for cadastral reform. Some challenges for the future were identified, such as (a) incorporating new types of tenure interests, which would require that the focus of the cadastre be the land itself rather than the legal procedures; (b) building an information infrastructure and seeking the coordination of jurisdictional cadastral projects in order to proceed incrementally in the development of effective land administration and land management; action, and (c) developing more effective land administration arrangements, thus seeking the management of the entire land tenure systems. In this way, the cost and delays of a fragmented land administration could be significantly reduced.

CHAPTER IV

WORK OF COMMITTEE II: CARTOGRAPHIC DATA MANIPULATION

12. Committee II considered the following agenda items: Automatic cartography: development and application of digital cartographic databases, including digital terrain modelling (item 5 (j)); Land/geographic information systems (item 5 (k)); and Map updating (item 5 (l)). The Committee reviewed 11 papers under item 5 (j) and 5 papers under item 5 (k). No paper was submitted under item 5 (j).

A. Automatic cartography: development and application of digital cartographic databases, including digital terrain modelling

13. The Secretariat presented a paper entitled "Spatial data quality standards: a necessity for effective use of digital cartographic databases" (E/CONF.86/BP.6). The paper described five criteria for data quality: lineage, positioned accuracy, attributive accuracy, completeness and logical consistency. The paper also presented the works of the Commission on Spatial Data Quality, created by the International Cartographic Association in 1990.

14. Finland presented a paper entitled "Development of the topographic data system in Finland" (E/CONF.86/L.4). The paper explained how the National Land Survey had upgraded the methods of topographic map production. The paper described the topographic data system, the collection and updating of topographic data, the topographic database, its products and the development of the topographic data system.

15. The United States of America presented a paper entitled "U.S. Geological Survey Standards for digital orthophotos" (E/CONF.86/WP.2). The paper presented the characteristics and production methods of the orthophotos. The paper also stressed the role of orthophotos as a source of geographic information, particularly as a tool for revision of data and as a digital layer in a geographic information system.

16. The United States of America also presented a paper entitled "The generation of a prototype USGS 1:24,000-scale topographic map from digital line graph data" (E/CONF.86/WP.4). The paper described the development of processes that led to the production of a fully symbolized colour composite proof of a 1:24,000-scale quadrangle from digital line graph data.

17. The United States of America presented a paper entitled "Toward a feature-based world: making the transition from DLG to DLG-E" (E/CONF.86/WP.6). The paper described how the United States Geological Survey is making the transition from its spatial data model (DLG) to its new feature-based model (DLG-E). The paper explained the enhancements contained in DLG-E and the methods being developed to convert existing DLG holdings to a DLG-E level of content.

18. The United States of America presented a paper entitled "Bridging the gap: creating near-shore bathymetric maps from multibeam swath sonar systems and conventional data" (E/CONF.86/WP.7). The paper explained how additional in-shore data sources were incorporated to supplement the multibeam survey data and provide a complete map depiction.

19. Canada presented a paper entitled "Data standards for the National Topographic Data Base" (E/CONF.86/WP.16). The paper described the characteristics of the data standards, more particularly the data model, the data structure and the data dictionary.

20. Canada presented a paper entitled "Digitizing system for existing topographic maps at the Canada Centre for Geomatics" (E/CONF.86/WP.17). The paper described the methods used to produce digital data from already existing maps and how this technology had become the chief data acquisition method for feeding the National Topographic Data Base.

21. Canada presented a paper entitled "Process for updating the National Topographic Data Base of Canada (E/CONF.86/WP.14). The paper presented the revision process based on overlaying the old file (vector data) and on ortho-image generated from SPOT imagery (recent raster data). The paper described the data preparation, ortho-image creation, field completion and updating steps.

22. Canada presented a paper entitled "Development of the digital cartographic process at Energy, Mines and Resources, Canada" (E/CONF.86/WP.15). The paper described how paper maps were generated from the National Topographic Data Base by fully computerized methods.

23. Chile presented a paper entitled "Desarollo del proyecto sistema de información cartográfico nacional" (E/CONF.86/WP.37). The paper described the implementation of the National Cartographic Information System at the Military Geographic Institute. The conceptualization and implementation processes and the cartographic process were outlined.

B. Land/geographic information systems

24. The Secretariat presented a paper entitled "GIS/LIS latest developments" (E/CONF.86/BP.4). The paper gave an overview of the state of the art and a vision of the progress still to be accomplished. The paper discussed key issues in various GIS/LIS activities and made a brief assessment of the role and nature of GIS.

25. The United States of America presented a paper entitled "The Spatial Data Transfer Standard (FIPS 173): the key to data sharing" (E/CONF.86/WP.3) The paper explained how SDTS would serve as the national spatial data transfer mechanism for all federal agencies. The paper stressed the importance of the acceptance by data users and systems vendors and described the implementation strategy.

26. The United States of America presented a paper entitled "The Digital Geographical Information Exchange Standard (DIGEST) - implementation status" (E/CONF.86/WP.10). The paper provided background information on DGIWG, current implementation of DIGEST - compliant datasets and future activities.

27. The United States of America presented a paper entitled "A product exchange format for the Defense Mapping Agency's vector products (E/CONF.86/WP.12). The paper presented the Vector Product Format (VPF) standard and the various VPF products, namely the Digital Chart of the World (DCW).

28. Spain presented a paper entitled "Sistema de información geográfica (SIG)" (E/CONF.86/WP.22). The paper described the implementation phases of the geographic information system at the National Geographic Institute of Spain. The paper described the following phases: definition of concepts, modelling of the reality and creation of databases.

C. Map updating

29. No paper was submitted under this item.